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Two new species of *Corynespora* from northeastern Uttar Pradesh, India

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Abstract — Two *Corynespora* species collected from northeastern Uttar Pradesh, India, are described and illustrated: *C. carrisae* sp. nov. from living leaves of *Carissa spinarum* (*Apocynaceae*) and *C. peristrophicola* sp. nov. from living leaves of *Peristrophe bicalyculata* (*Acanthaceae*).

Key words — biodiversity, hyphomycetes, foliar diseases, phytopathogenic fungi, taxonomy

Introduction

Indian researchers have added several novel species to the anamorphic genus *Corynespora* during the past few years (Meenu et al. 1997, Meenu & Kamal 1998, Sharma et al. 2002, Jain et al. 2002, Pal et al. 2007, Singh et al. 2007, Kumar et al. 2008). During our recent survey, we encountered several plant species exhibiting leaf blights. Upon critical examination and a thorough survey of the literature, we found that two blights were caused by two new *Corynespora* species: *C. carrisae* on *Carissa spinarum* L. (*Apocynaceae*) and *C. peristrophicola* on *Peristrophe bicalyculata* (Retz.) Nees. (*Acanthaceae*). These taxa are described and illustrated below.

Materials & methods

Infected leaf samples from different parts of northeastern Uttar Pradesh (U.P.) were placed in separate polythene bags and taken to the laboratory. Suitable mounts of surface scrapings and free-hand cut sections were prepared from infected portions of the leaf samples. The material was mounted in a cotton-blue lactophenol mixture on microscope slides. The slides were examined, the specimens were measured and camera lucida drawings were made. Morphotaxonomic determinations were made with the help of current literature and available resident expertise. Holotypes have been deposited in HCIO (Herbarium Cryptogamiae Indiae Orientalis), Indian Agricultural Research

Institute, New Delhi; isotypes were retained in the herbarium of the Department of Botany, D.D.U. Gorakhpur University, Gorakhpur, for further reference.

Taxonomy

Corynespora carrisae R. Singh & Kamal, **sp. nov.** Fig. 1

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Maculae amphigenae, circulares vel subcirculares, 3–5 mm in diam., brunneae vel atrae. Coloniae amphiphyllae, effusae, brunneae. Mycelium internum, tenuitnicatum, glabrum, ex hyphis ramosis, olivaceo brunneis vel brunneis. Stromata nulla. Conidiophora singularia, macronematosa, mononematosa, erecta vel procumbenta, recta vel flexuosa, nonramosa, cylindrica, glabra, crassitunicata, 4–8-septata et 1–15 successivas proliferationes, 250–675 × 4–10 μm, cellula basalis inflatis, brunneis vel atro brunneis. Cellulae conidiogenae in conidiophoris integratae, terminales, monotreticae, cicatrices non incrassates. Conidia acrogenaes, solitaria, simplicia, non ramosa, tenui tunicata, glabra, recta vel curvata, obclavato-cylindrica, 4–17-distoseptata, 75–242 × 6–14 μm, ad apicem obtusa vel rotundata, olivacea vel luteo brunnea, hilo in crassato, germinato conidium notatum.

Type: On living leaves of *Carissa spinarum* (*Apocynaceae*), Kusumhi forest, Gorakhpur (U.P.), India, 19 September 2007, coll. Raghvendra Singh, HCIO No. 48276 (**holotype**), GPU Herb No. KR-10 (**isotype**).

Etymology: the epithet is derived from the genus name of the host.

Infection spots amphigenous, circular to subcircular, 3–5 mm in diameter, brown to black. Colonies amphiphyllous, effuse, brown. Mycelium internal, thin-walled, smooth, branched, olivaceous brown to brown. Stromata absent. Conidiophores arising singly, macronematous, mononematous, erect to procumbent, straight to flexuous, unbranched, cylindrical, smooth, thick-walled, 4–18-septate and 1–15 successive cylindrical proliferations, 250–675 × 4–10 μm, basal cell swollen, brown to dark brown. Conidiogenous cells integrated, terminal, monotretic, scars unthickened. Conidia acrogenous, solitary, simple, unbranched, thin-walled, smooth, straight to slightly curved to obclavate-cylindrical, 4–17-distoseptate, 75–242 × 6–14 μm, apex obtuse to rounded, olivaceous to very light brown, hilum thickened, germinating conidia present.

Remarks— Only one *Corynespora* species, *C. alstoniae* Meenu et al. (Meenu et al. 1997), has been described on *Apocynaceae*. Compared with the present collection, *C. alstoniae* has shorter and broader conidiophores (121–473.5 × 6.0–13.5 μm) and conidia (48.5–154 × 8.5–21.5 μm). The hilum in *C. carrisae* is thickened while in *C. alstoniae* it is unthickened.

Unbranched to branched and longer conidiophores (110–850 × 4–11 μm) easily distinguish *C. carrisae* from *C. cassiicola* (Berk. & M.A. Curtis) C.T. Wei (Wei 1950), which has unbranched, shorter conidiophores. Its 4–17-distoseptate longer thinner conidia also contrast with the 4–20-distoseptate shorter thicker (40–220 × 9–22 μm) conidia in *C. cassiicola*.

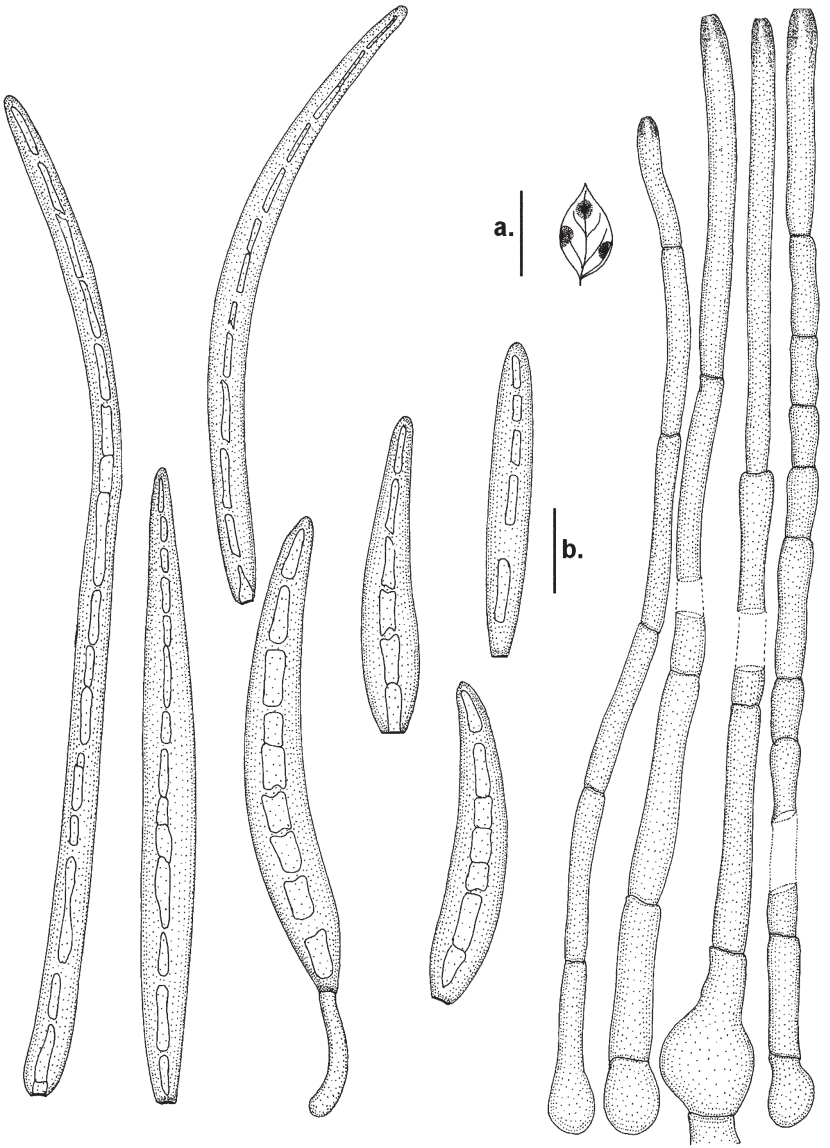

Fig. 1. *Corynespora carrisae.*
a: symptoms; b: conidia, germinating conidia, and conidiophores.
(Scale bars: a = 20 mm, b = 20 μm).

The new species appears to be most similar to *C. euphorbiacearum* Meenu et al. (Meenu et al. 1997). *Corynespora carrisae* has more septa (4–18), more successive cylindrical proliferations and longer conidiophores compared with *C. euphorbiacearum* with 3–7-septate, shorter conidiophores (100–358 × 6–8 μm), and thickened noncatenate and narrower conidia separate *C. carrisae* from *C. euphorbiacearum* conidia that are unthickened, solitary to catenate, and broader (59–235 × 11.5–22.5 μm).

One other possible close relative is *C. gigaspora* (Berk. & Broome) M.B. Ellis (Ellis 1957), which produces conidia that are longer and broader (100–270 × 19–28 μm) with more distosepta (9–52).

Corynespora peristrophicola R. Singh & Kamal, **sp. nov.** Fig. 2

MycoBank MB 519051

Maculae epigenae, circulares vel subcirculares/irregulares, 1–18 mm in diam., brunneae vel atrae. Coloniae epiphyllae, effusae, grisae. Mycelium internum, tenui tunicatum, glabrum, ex hyphis ramosis, olivaceo-brunneis vel brunneis. Stromata nulla. Conidiophora superficialia, ex hyphis oriunda singulata vel 2–3-fasciculata, macronematosa, mononematosa, cylindrica, recta vel procumbenta, erecta vel flexuosa, non ramosa, glabra, crassitunicata, 5–18-septata et 1–3 successivas proliferationes, medio brunnea, 120–325 × 5–10 μm, cellula basalis inflatis. Cellulae conidiogenae in conidiophoris incorporatae, terminales, monotreticae, cicatrices incrassatae. Conidia acrogena, sicca, solitaria, simplicia, non ramosa, tenui tunicata, glabra, recta vel leniter curvata, obclavata vel obclavato-cylindricata, 5–12-distoseptata cum 0–1 angulis distoseptis simulatibus, 60–135 μm longa et 5–16 μm lata, apicem obtusa vel rotundata, olivacea vel luteo-brunnea, hilo crassato praedita.

Type: On living leaves of *Peristrophe bicalyculata* (*Acanthaceae*), Gorakhpur University campus, Gorakhpur (U.P.), India, 2 December 2007, coll. Raghvendra Singh, HCIO No. 48278 (**holotype**), GPU Herb No. KR-12 (**isotype**).

Etymology: the epithet is derived from the genus name of the host.

Infection spots epigenous, circular to subcircular/irregular, 1–18 mm in diameter, brown to blackish. Colonies epiphyllous, effuse, grayish. Mycelium internal, thin-walled, smooth, branched, olivaceous to brown. Stromata absent. Conidiophores arising singly as lateral branches from superficial hyphae, solitary or in fascicle of 2–3, macronematous, mononematous, cylindrical, erect to procumbent, straight to flexuous, unbranched, smooth, thick-walled, 5–18-septate with 1–3 successive cylindrical proliferations, mid brown, 120–325 μm long and 5–10 μm wide, basal cell swollen. Conidiogenous cells integrated, terminal, monotretic, scars unthickened. Conidia acrogenous, dry, solitary, simple, unbranched, thin-walled, smooth, straight to slightly curved, usually obclavate to obclavate-cylindrical, 5–12- distoseptate with 0–1 transverse band-like distosepta, 60–135 μm long and 5–16 μm wide, apex obtuse to rounded, olivaceous to very light brown, hilum thickened.

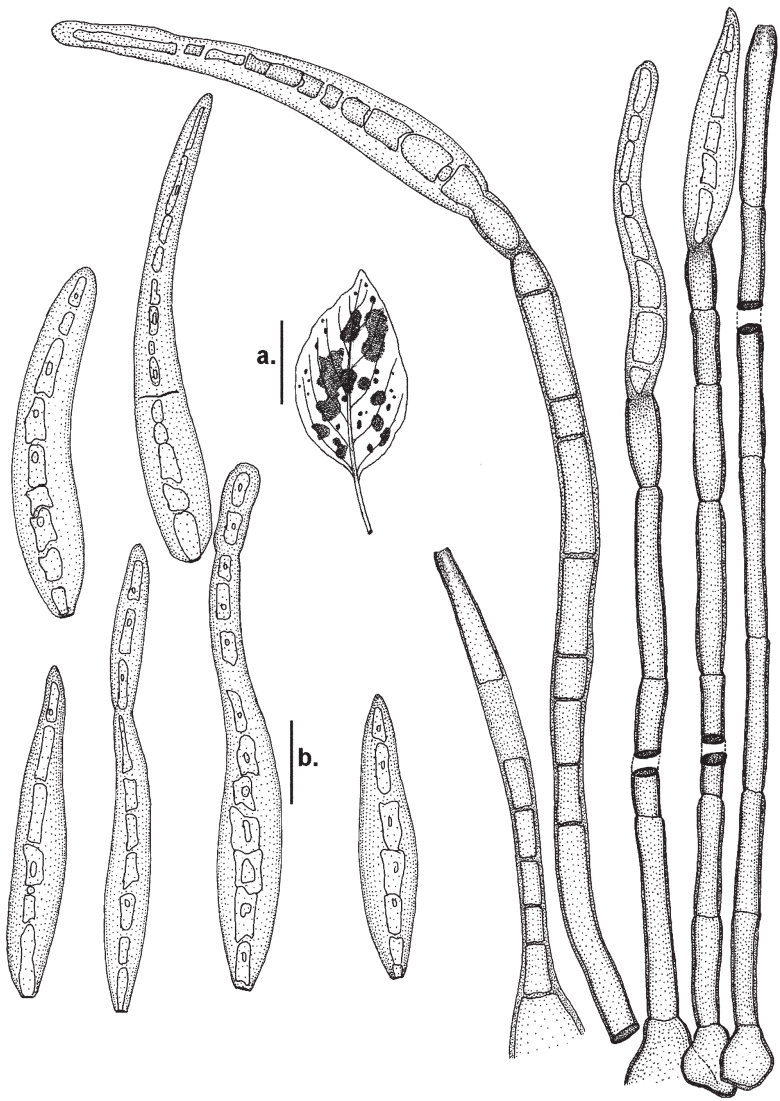

Fig. 2. *Corynespora peristrophicola.*
a: symptoms; b: conidia and conidiophores.
(Scale bars: a = 20 mm, b = 20 μm).

Remarks— Only *C. barleriicola* N. Sharma et al. (Sharma et al. 2002) has is known to occur on members of *Acanthaceae*. *Corynespora peristrophicola* has shorter unbranched 5–18-septate conidiophores while those in *C. barleriicola* are branched, 3–7-septate, and longer (253–479 × 7–9 μm). Furthermore, *C. barleriicola* has longer conidia (41–246 × 10–18.5 μm), which are 3–17-distoseptate with 0–5 distinct transverse band-like distosepta, and its hila are unthickened.

The conidia of *C. peristrophicola* appear most similar to those of *C. siwalika* (Subram.) M.B. Ellis (Ellis 1961: 88–140 × 15–20 μm), *C. leptoderridicola* M.B. Ellis (Ellis 1957: 70–120 × 14–17 μm), and *C. combreti* M.B. Ellis (Ellis 1963b: 40–122 × 8–11 μm) but lack the rostrate morphology typical of the other species. The 5–12 conidial distosepta in *C. peristrophicola* are slightly more numerous than in *C. combreti* (4–10-distosepta) and less numerous than in *C. leptoderridicola* (6–16-distosepta) and *C. siwalika* (9–19-distosepta).

The new species also resembles *C. alstoniae* (Meenu et al. 1997), which, however, has longer broader conidiophores (121–473.5 × 6–13.5 μm) and broader, catenate unthickened conidia (48.5–154 × 8.5–21.5 μm).

Other possible closely related species are separated by number of distosepta: *C. bdellomorpha* M.B. Ellis (Ellis 1963a) with 12–19 and *C. eranthemi* J.M. Yen & Lim (Yen & Lim 1980) with 5–25.

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Literature cited

Ellis MB. 1957. Some species of *Corynespora*. Mycological Papers 65: 1–15.

Ellis MB. 1961. Dematiaceous hyphomycetes: III. Mycological Papers 82: 1–55.

Ellis MB. 1963a. Dematiaceous hyphomycetes: IV. Mycological Papers 87: 1–42.

Ellis MB. 1963b. Dematiaceous hyphomycetes: V. Mycological Papers 93: 1–33.

Jain SL, Rai AN, Mehta P. 2002. Additions to the genus *Corynespora* from India. Indian Phytopathology 55(1): 51–56.

Kumar S, Singh R, Pal VK, Singh DP, Agarwal DK. 2008. Novel additions to *Corynespora* Güssow from India. Indian Phytopathology 61(1): 111–117.

Meenu, Kamal. 1998. New species of *Corynespora*. Mycological Research 102: 344–345. http://dx.doi.org/10:1017/S0953756297005455

Meenu, Singh A, Singh SK. 1997. Some new forms of genus *Corynespora*. Indian Phytopathology 50(1): 17–24.

Pal VK, Akhtar M, Agarwal DK, Chaudhary RK, Ahmad N. 2007. Diversity of foliar fungi in the forest flora of North-Eastern U.P: Five new species of *Corynespora* Gussow. Indian Phytopathology 60(3): 330–340.

Sharma N, Chaudhary RK, Kamal. 2002. Five undescribed species of *Corynespora*. Indian Phytopathology 55(4): 458–463.

Singh R, Kumar S, Pal VK, Upadhyaya PP, Agrawal DK. 2007. New Taxa of foliicolous hyphomycetes-*Cercospora, Corynespora* and *Phaeotricoconis* from North Eastern U.P. India. Indian Phytopathology 60(4) 506–512.

Wei CT. 1950. Notes on *Corynespora*. Mycological Papers 34: 1–10.

Yen JM, Lim G. 1980. Etude sur les champignons parasites du Sud-Est asiatique. 37. Les *Corynespora* de Malaisie. Cryptogamie Mycologie 1: 83–90.